

MONTANA STATE DEPARTMENT OF FISH AND GAME  
FEDERAL AID IN FISH RESTORATION SECTION  
HELENA, MONTANA

JOB COMPLETION REPORT  
INVESTIGATIONS PROJECTS

State of Montana

Project No. F-7-R-5

Job No. III

Title of Job: The Effects of Logging on Pinkham Creek's Fish Population

Abstract:

Eight randomly selected stations, each 300 feet long were sampled and 345 eastern brook trout and 226 rainbow trout were captured. The condition factor (C) of the eastern brook trout averaged 26.4 and the rainbow trout 32.2. Logging operations have continued and 1,180 acres of land were cut from a 5 to 95 percent cut. There was a slight increase of both total number and total weight of all trout captured.

Objective:

To measure the fish population of a trout stream over a period of years in a locality where virgin timber is being removed so that any changes which may take place in the population may be determined.

Techniques Used:

The same eight stations were sampled as was done in previous years, but Section nine was omitted due to the large amount of beaver activity in the stream. Each station sampled was 300 feet long. The sampling was accomplished with a 220-volt AC generator. Before sampling, each station was blocked off with one-half inch square mesh nets and all fish captured were weighed and measured. The amount of timber cutting done in the drainage was obtained from the U. S. Forest Ranger at Rexford, Montana.

Findings:

The stream and drainage has been described in previous completion reports.

During 1955, 1180 acres of land were logged, varying from a five percent cut to ninety-five percent. Three hundred and ten acres plus one hundred ninety acres that were logged in 1954 were cleared by dozer, brush piled and burned, and the ground scarified during the past year. On this acreage, 16,500,000 board feet of spruce, and 3,000,000 board feet of pine, fir and larch was obtained. Since this study has been initiated, 46,500,000 board feet of timber has been removed from the drainage.

The number of fish captured and their weights are presented in Table I and II. Length frequency graphs of all fish captured are given in Figures I and II. A temperature of 62°F. was recorded on August 9, 1955.

TABLE I -- The numbers and weights of eastern brook trout captured in the various sampling sections of Pinkham Creek from 1951 to 1955

Sections	1951		1952		1953		1954		1955	
	No.	Wt.	No.	Wt.	No.	Wt.	No.	Wt.	No.	Wt.
1			15	.96	14	.97	14	.84	12	.66
2	47	2.29	55	2.59	35	1.88	21	1.66	38	1.56
3			40	1.81	32	1.43	16	.71	25	1.31
4			78	3.06	70	2.99	45	2.15	39	2.01
5	30	1.99	30	1.51	25	.85	31	1.25	54	1.92
6	40	2.13	46	2.80	62	2.96	43	2.23	49	2.35
7	109	6.48	70	3.28	102	4.13	31	1.01	41	1.46
8			103	4.93	151	7.11	90	4.62	87	2.99
Totals	226	12.89	437	20.94	491	22.32	291	14.47	345	14.26

TABLE II -- The numbers and weights of rainbow trout captured in the various sampling sections of Pinkham Creek from 1951 to 1955

Sections	1951		1952		1953		1954		1955	
	No.	Wt.	No.	Wt.	No.	Wt.	No.	Wt.	No.	Wt.
1			42	3.22	81	3.90	40	2.08	44	2.81
2	26	1.81	41	2.96	68	4.63	60	2.76	63	4.34
3			42	2.96	42	2.80	31	1.48	34	2.37
4			26	2.17	37	2.48	26	.89	21	1.27
5	7	.49	15	1.63	12	.90	19	.76	29	1.72
6	7	.59	22	1.87	29	2.33	16	.82	28	2.04
7	1	.27	4	.36	6	.43	8	.85	6	.49
8			1	.07					1	.04
Totals	41	3.16	193	15.24	275	17.47	200	9.64	226	15.08

TABLE III -- The numbers and weights of all fish captured in the various sections in Pinkham Creek from 1951 to 1955

Sections	1951		1952		1953		1954		1955	
	No.	Wt.	No.	Wt.	No.	Wt.	No.	Wt.	No.	Wt.
1			57	4.18	95	4.87	54	2.92	56	3.47
2	73	4.10	96	5.55	103	6.51	81	4.42	101	5.90
3			82	4.77	74	4.23	47	2.19	59	3.68
4			104	5.23	107	5.47	71	3.04	60	3.28
5	37	2.48	45	3.14	37	1.75	50	2.01	83	3.64
6	47	2.72	68	4.67	91	5.29	59	3.05	77	4.39
7	110	6.75	74	3.64	108	4.56	39	1.86	47	1.95
8			104	5.00	151	7.11	90	4.62	88	3.03
Totals	267	16.05	630	36.18	766	39.79	491	24.11	571	29.34

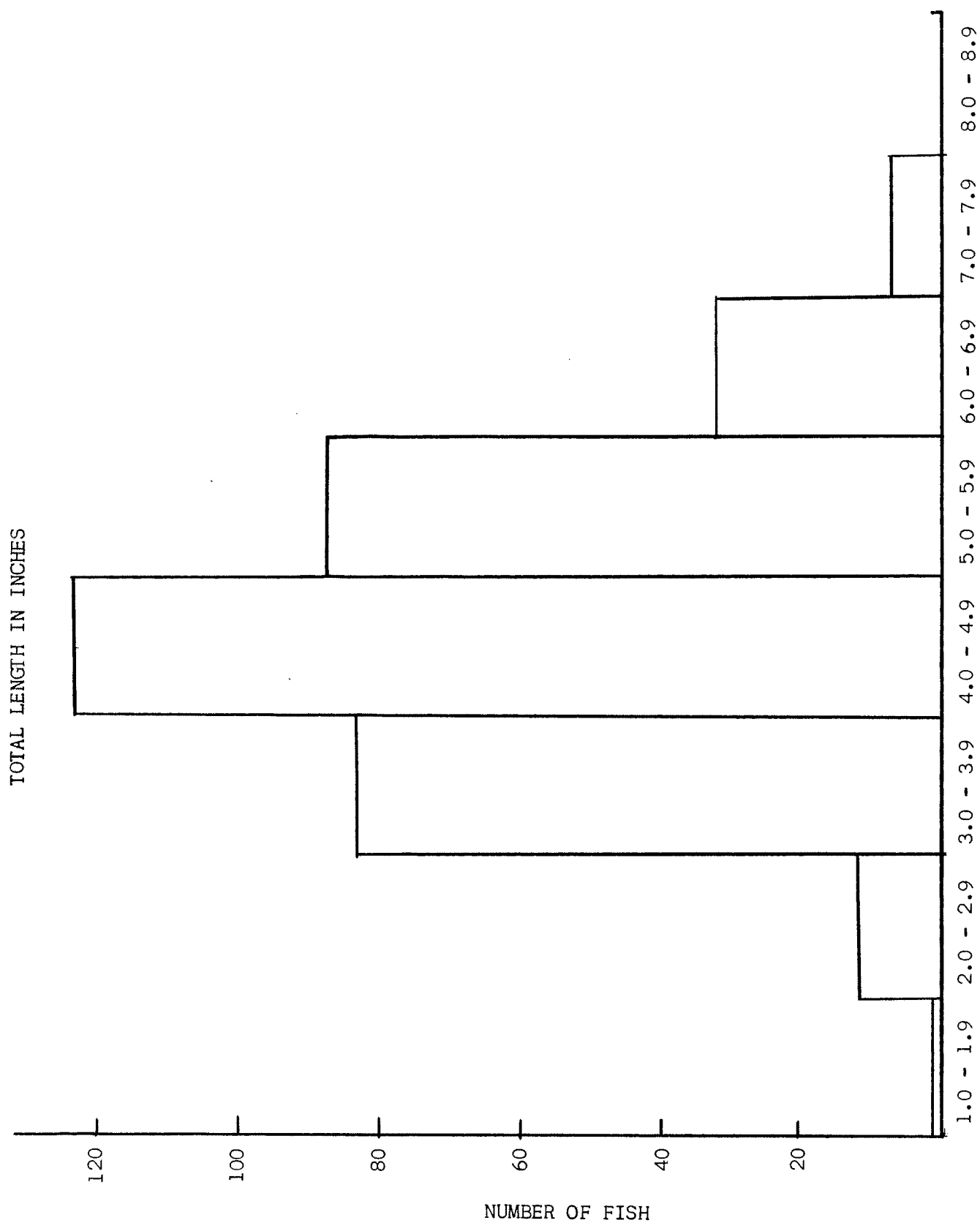


Figure 1. Length frequency of 345 eastern brook trout captured in Pinkham Creek in 1955.

TOTAL LENGTH IN INCHES

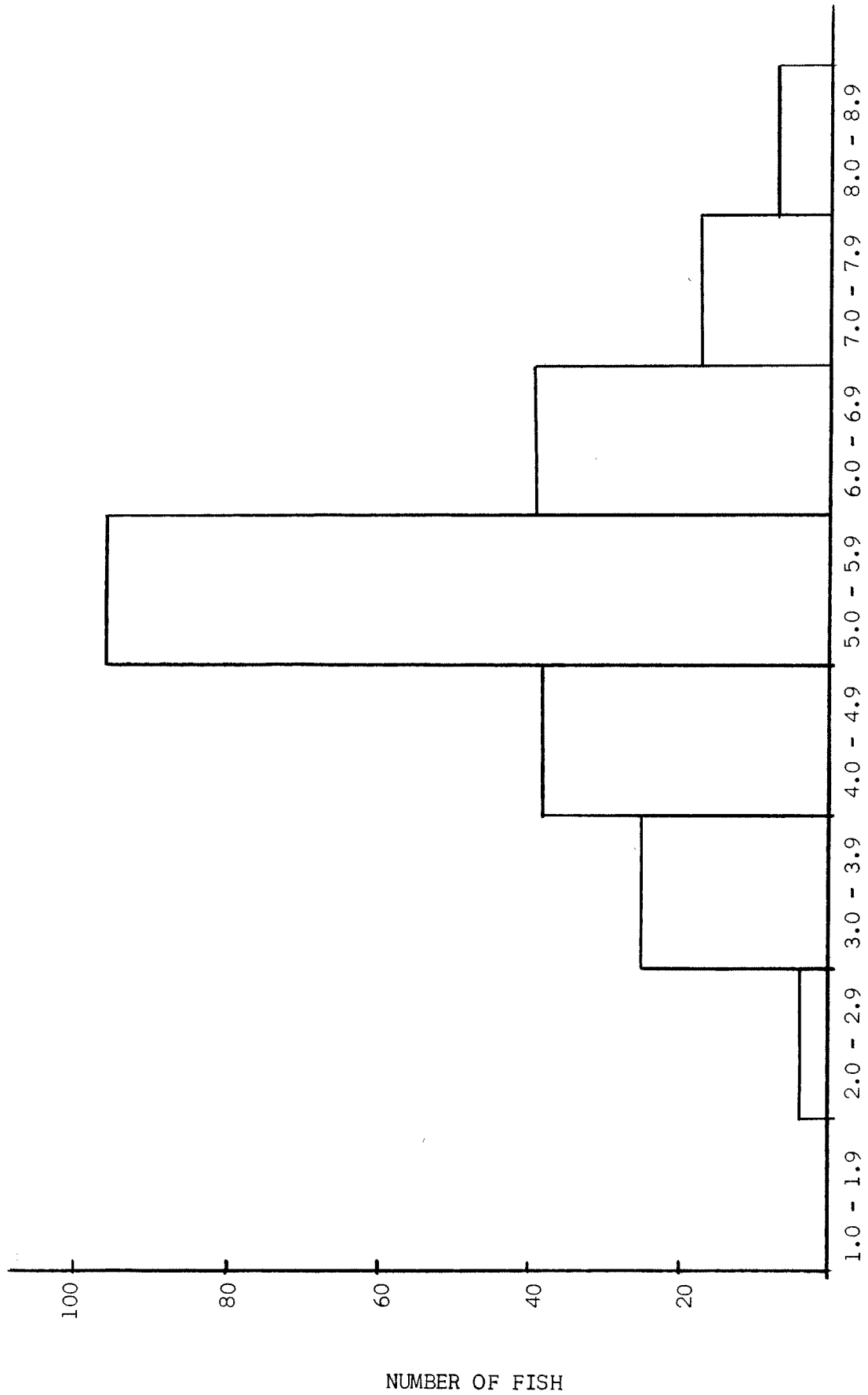


Figure 2. Length frequency of 226 rainbow trout captured in Pinkham Creek in 1955.

### Analysis and Recommendations:

A greater number of the fish captured are still eastern brook trout. A total of 345 eastern brook trout and 226 rainbow trout were captured in the eight sections sampled. The rainbow trout comprised 39.6 percent of the fish populations of the sections sampled.

The condition factor was calculated for fish weighing 0.04 of a pound or more. This figure was arbitrarily selected due to the type of scale used for the weighing of fish. The condition factor C of the 177 rainbow trout averaged 32.2 and that of 165 eastern brook trout 36.4.

The eastern brook trout were found in all stations but were more numerous in the uppermost sampling section. Rainbow trout were found in all of the stations but were least abundant in the two uppermost sampling sections.

In comparing the populations for the eight stations sampled with the previous year's population, there was an increase in numbers of both eastern brook and rainbow trout. A slight decrease in the total weight of the eastern brook trout occurred while a considerable increase of the rainbow trout took place. The total number of trout increased in both number and weight over that of the previous year.

No drastic changes were noted in the stream bed, banks, other than what may be caused by the usual spring run-off.

It is recommended that this study be continued, so that changes in populations and population composition may be observed as the logging proceeds.

### Summary:

Eight randomly selected stations each 300 feet long were sampled and a total of 345 eastern brook trout and 226 rainbow trout were captured. The rainbow trout comprised 39.6 percent of the population.

During the year, 1,180 acres of land were logged varying from 10 percent to 95 percent cut.

There was a slight increase in both numbers and weight of all trout captured over that of the previous year. However, the total population has not reached the peak obtained so far as in 1953.

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